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THOMAS G. NEWMAN, Editor.

EDITORIAL

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Mr. and Mrs. T. W. Cowan are spending a few days in the White Mountains, on account of the extreme heat. Leaving there they will visit Montreal, and thence journey westward. They return to England in October, from New York, by the Umbria. Mr. Cowan writes us that he has been much pleased with his visit so far, and adds: "I was glad to see the apiaries of Capt. Hetherington and Mr. Elwood."

Mr. B. F. Woodcock, of Pleasantville, Iowa, died on Aug. 4, 1887. He was an extensive apiarist, and had a large circle of bee-keeping friends. He died quite suddenly of a bowel trouble, brought on by the extremely "hot" weather of the past few weeks.

We have heard of quite a number of others who were overcome by the heat, but so far this is the only fatality reported from it.

The Minneapolis Industrial Exposition will open at Minneapolis, Minn., on Aug. 31, and close Oct. 15, 1887. We have received a nice chromatic poster, making this announcement.

Quite Unnecessary Now.—Mr. C. H. Dibbern, in the *Plowman*, asks the following very pertinent questions:

How about the honey trade this fall? Will it be necessary to form a combination to control prices? Will not rather the cry be, "Where can we get some of that beautiful white clover honey that has become such a necessity in the family?" The supply will be short indeed, and I hope that those bee-keepers so fortunate as to produce any crop, will ask a reasonable price for it, for they can surely get it.

Yes, by all means, get good prices for the very little honey which can be sold from this year's crop.

It will be well to talk the matter over at the Chicago Convention this fall, and, perhaps, arrange for the future; but no "combination" will be needed to obtain full value for every pound of honey produced during the present season. The "future" demands our attention and resources in making plans, just as much as the present.

The Head of the Bee-Family.—In an address on bees before a New York horticultural society, by Mr. A. B. Williams, the following passages occur:

The queen, or mother-bee, is the most remarkable among all the bees of a colony. The early bee-fathers held her to be a male. Virgil always calls her "rex" (king). The German name also, "weiser" (guide or leader) proves that she was thought to be a male, and was erroneously believed to lead off the swarm, showing the way. Though this error was long ago abandoned, there are those still who assert that there is a king. Yet any one in observing a colony can see at once that she is superior to all others. The queen is of greater length by about one-half of the body, provided with longer and yellow feet, the only one of its kind in a colony. If each of the workers, furnished as it is, with a sting, cheerfully risks its life for its queen, this is from love only, as the queen neither governs, commands, gives orders, nor advises. All she does is to lay an astonishing number of eggs, from 1,000 to 3,000 in a day, and fix each of them accurately by one end of its oval figure to the upper back wall of the cell. It is a remarkable fact, too, that the queen, though able to eat without the aid of others, does not usually do so, but is fed all her life by the workers. It is probable that this food, being excellent in quality and easy of digestion, is prepared by the workers for the queen herself.

Rain has come at last, but not until nearly everything in the Northwest was burned up by the extreme heat of the past two months. Never before within the memory of the oldest inhabitant has there been so much hot weather, and extending for so long a time. The rains of last week were general, and came just in time to save a great calamity. The wells and other water sources were nearly all dried up, the prairies were on fire in nearly all directions, thousands of families were deprived of homes by this devouring element, many of the crops not already burned up by the rays of Old Sol, were consumed by the flames extending from the prairie fires. Just then black clouds appeared, and Mother Earth was drenched with water from the heavens. Let us hope that we may never experience another such a summer as the present—calamitous alike to all crops, as well as to the bees and bee-keepers.

August, anciently considered a "lucky" month, has not brought prosperity to the bees this year. June, July and August of this year will long be remembered as the hottest and driest for ages. August, before the time of Julius Cæsar, was called Sextilis—the Sixth—and it had but 29 days. In reforming the calendar, Julius added one day to Sextilis, making it 30 days in length. His successor, Augustus, finding Sextilis a remarkably "lucky" month in his career, added another day to it, shortening February correspondingly, and changed the name Sextilis to August.

Let us hope that the next time August comes around, the weather will be more propitious for honey as well as all other crops.

Recently a man down in Kennebunkport, Maine, says an exchange, captured 800 bees while they were swarming in the woods. He daubed himself with honey, the bees alighted thereupon, and in this way he transported them home without receiving a sting.

Seasonable Hints.—Mr. C. H. Dibbern, in the *Plowman*, gives the following hints for this month:

Robbing may now be expected, and should be guarded against. If you have weak or queenless colonies, break them up and remove the hives to a safe place. Do not expose honey where the bees can get at it, or it will demoralize your whole apiary. It is wonderful how soon bees discover that honey can be had, and how persistent they are.

From all quarters comes the same story, few swarms and no honey. From all I can learn about the honey crop, there is a general failure all over the Western States. Even California reports indicate about one-fourth of a crop. Canada and the Eastern States show up better, and will likely produce a fair crop of nice white honey.

I had anticipated some surplus from the linden, but although it bloomed profusely, and the bees worked on it from daylight to dark, they entirely failed to put any honey in the sections. Indeed, so small was the quantity gathered from the linden, that I had a strong colony actually starve during its bloom.

Now the only resource for the next few weeks, is the sweet clover I have planted for the bees. It is now in full bloom, and any time of the day it is covered by myriads of bees.

Poor, Poorer, Poorest!—The general verdict is that the present season has been the *poorest*, for honey-production, of any for many years. The wholesale and commission men are already looking out for supplies of honey, and we advise all having any to sell to put a good round price on it, and "stick to it." There will be no trouble in selling all the honey on hand at good figures. *Do not sacrifice it!*

Who Can Tell the Value of a Smile? asks an exchange.—It costs the giver nothing, but is beyond price to the erring and relenting, the sad and cheerless, the lost and forsaken. It disarms malice, subdues temper, turns hatred to love, revenge to kindness, and paves the darkest paths with gems of sunlight.

These Shows will be held at Chicago from Nov. 8 to 18, 1887, viz: American Horse Show, American Dairy Show, American Fat Stock Show, and American Poultry Show. During these shows the Union Convention has been appointed to be held. See notice in another column.

The September number of Frank Leslie's Sunday Magazine brings together a large number of pleasant articles combining instruction and entertainment, and all breathing forth a high moral spirit, though carefully avoiding the teaching of any special religious doctrines. Among the important articles may be found one by Walter Edgar McCann, on "The Rise and Growth of our National Capital," which is fully illustrated with portraits and views of the City of Washington, and those who have made it famous. The two serial stories both keep up and indeed increase their interest, and the short articles and poems are very good and entertaining.

Our New Book List on the second page is the place from which to select the book you want. We have a large stock of every book there named, and can fill all orders on the day they are received.

QUERIES

With Replies thereto.

[It is quite useless to ask for answers to Queries in this Department in less time than one month. They have to wait their turn, be put in type, and sent in about a dozen at a time to each of those who answer them; get them returned, and then find space for them in the JOURNAL. If you are in a "hurry" for replies, do not ask for them to be inserted here.—ED.]

Frames Partly Filled with Pollen.

Query 456.—What is the best way to treat frames that are partly filled with pollen, to such an extent that no honey is stored in one-third of the cells?—F. R., Texas.

Use them for early spring breeding.—G. M. DOOLITTLE.

Put them to one side till early spring, and they will use it in brood-rearing.—H. D. CUTTING.

Give them to a breeding colony. If the pollen is too old, you can only melt them up.—DADANT & SON.

Put them into the middle of the brood-chamber in the month of June.—JAMES HEDDON.

My plan is to hold over such frames, and then place them in the hives in early spring, and let the bees clean them out.—J. P. H. BROWN.

Leave them for the bees; they need this pollen. I have never had too much pollen in my hives.—A. J. COOK.

In this locality I have never known bees to gather more pollen than they could profitably make use of; and we often get frames of comb having apparently too much pollen.—G. L. TINKER.

Keep them until spring, and then give them to the bees. Their places may be filled with frames of foundation, and the bees fed if necessary.—W. Z. HUTCHINSON.

It depends upon circumstances. In my locality I only need to give such a frame to a good colony, and it will be properly taken care of. If many of them, one or two could be given to each colony.—C. C. MILLER.

Keep them until spring, and give them to colonies that need stimulating to produce early brood. We are not troubled with excess of pollen in this section, and have no trouble whatever in getting all that is stored worked up into young bees.—J. E. POND.

Exchange them for combs in the brood-nests that have no pollen in them. I have frequently lost honey by putting combs partly filled with pollen in the cases to have honey stored for the "honey machine." Bees will not remove the pollen from the combs when storing surplus. In the spring of the year, when the combs are mostly empty, both stored away, and in the brood departments, they should be sorted out and the pollen-filled combs should be put in the brood-nests. The bees will clean out the pollen if for nothing more than to give room for the brood. I simply "swap" the pollen-filled combs for combs in the brood-nest that have no pollen in them.—G. W. DEMAREE.

Give them to the bees when they are rearing brood.—THE EDITOR.

Bee-House for Wintering.

Query 457.—I want to arrange a bee-house for wintering bees. The house is built, and it is 7x9 feet inside and 6½ feet high; and has boards and siding on the outside, and tar paper inside. On the south side is a glass wall or front. I am going to put in a wall 4 inches from the inside of the glass wall, of flooring, and seal it, and have a double door. This will now be sealed all over with tar paper between the walls. Then I will put common building-paper all over, ceiling and all. I will put a 4-inch ventilator at each end of the house. Will this make a good bee-house? or would it be better to cover the glass front over? I thought by leaving it and putting a 4-inch wall inside of it, it would warm the house greatly, and be a good thing. There will be no window in it, but will be perfectly dark.—Herman, Wis.

It will make a good repository.—J. P. H. BROWN.

We have no experience with bee-houses for wintering. We prefer a bee-cellar.—DADANT & SON.

For Wisconsin I should much prefer a cellar. See page 439.—A. J. COOK.

I think you will never regret making the constructions you describe, unless on account of expense.—JAMES HEDDON.

The heat secured as the result of the glass side, if there should be any, would be too variable. From the earth is the place to get heat for a bee-cellar in winter.—W. Z. HUTCHINSON.

You are treading on comparatively new ground, and will take some risk in making the experiment. I should feel a good deal safer with the bees in a good cellar.—C. C. MILLER.

I have never used a bee-house, but judging from the reported experience of those who have, my opinion is that they are not worth the expense of their construction, as the interest on the money invested will pay for losses. I speak, however, from my own stand-point only, and have wintered my bees on the summer stands for years without loss.—J. E. POND.

Such a house as you describe would not be frost-proof in zero weather, and unless you resort to artificial means to keep up the temperature to about 45°, your bees had better be wintered on the summer stands. Any one acquainted with the "reports on wintering bees," must have noticed that *cold* in a cellar or bee-house is more destructive to bee-life than cold in the open air, that is in the bee-yard.—G. W. DEMAREE.

I should prefer common building-paper in place of tar-paper for a bee-house, and the reverse for a poultry house. I would prefer one ventilator 8 inches (not 8 feet) in the centre reaching to within 2 inches from the floor. Your glass front will help warm the building, but you should provide some way to cover over the glass front in very cold nights; also when it begins to get warm in the spring, old carpets would do.—H. D. CUTTING.

As cold penetrates glass very readily, it should be covered on days when the sun does not shine. But we have so few days in winter that the sun shines out clear, that I do not think such an arrangement could be relied upon to keep up the temperature in a bee-house.—G. L. TINKER.

I have had no experience with a bee-house, but I should guess that a window should have shutters over it, so that they could be closed in a warm time, else the house might be almost too warm. On cold, sunshiny days open the shutters if the room needs warming. This is all guess-work, however.—G. M. DOOLITTLE.

That will doubtless make a good winter repository for the bees.—THE EDITOR.

Chaff Packing over the Frames.

Query 458.—Where bees are wintered in Southern Michigan on the summer stands, with 3 or 4 inches thick of chaff packing between the hive and the outer case, how many inches thick of chaff should there be placed over the top of the frames, so the moisture may pass off freely?—Pittsford, Mich.

Six inches.—W. Z. HUTCHINSON.

I use about 3 inches.—G. M. DOOLITTLE.

The moisture will pass off through any amount of chaff.—DADANT & SON.

I use a chaff cushion about 5 inches thick, and I have no trouble with moisture.—H. D. CUTTING.

The moisture will pass off freely through almost any thickness of chaff packing over the top. Eight inches would be preferable to four, and two feet would be excellent.—JAMES HEDDON.

It would depend upon the strength of the colony, and the ventilation above the chaff in the upper story. Four inches of packing does very little good here, when placed at the sides, but it seems to be about right over the brood-nest.—G. W. DEMAREE.

I do not know, but here in eastern Massachusetts, where the mercury ranges anywhere from 20° above to 20° below Fahr., I find that 5 or 6 inches thick of forest leaves pressed loosely, is amply sufficient, and I should judge that what is good here, would also be good in Michigan.—J. E. POND.

If a thin, unpainted board is placed over the brood-chamber the moisture will pass off through several inches of chaff. But if the bees are not able to keep up a proper temperature in the hive, no moisture will pass upward into anything. It is the retained heat of the cluster that drives off all moisture. A thin board is the best thing to retain the heat in out-door wintering.—G. L. TINKER.

The packing could hardly be too thick—but 6 or 8 inches will be far preferable to 3 or 4.—THE EDITOR.

Correspondence.

This mark ⊙ indicates that the apiarist is located near the center of the State named; ♂ north of the center; ♀ south; ○+ east; +○ west; and this ♂ northeast; ♂○ northwest; ○♀ southeast; and ♀ southwest of the center of the State mentioned.

For the American Bee Journal.

Hot Weather—Introducing Queens.

G. M. DOOLITTLE.

Hot, hot, hot, has been the order of the day for the past six weeks, and although the prespiration flowed freely from every pore, and the sun beat down fiercely on me all day, I rather enjoyed these days of toil in the apiary until about a week ago when the flow of nectar stopped so effectually that not a drop could be obtained. For a day or two the bees behaved very well, but hot weather with nothing to do soon let the evil disposition loose in them, and they seemed all of one accord to start out on a marauding expedition.

The first thing that greeted my ears in the morning, at early dawn, was the shrill notes of bees prying about in every nook and corner on the premises, and the same was the consoling and all absorbing music at twilight. Never before did I see such persistent exertions made by bees to plunder the stores of each other as I have the past week. This, with all of my other duties, kept me on a jump from "early morn till dewy eve," and to save my nuclei from being plunddered was the all-absorbing thought of the hour. I must save these, for I needed from 30 to 35 queens a day for shipping, and the getting of these out of the hives only whetted the appetites of the robbers.

At last something practical suggested itself. It was this: Place the combs at one side of the hive, and have the entrance at the other. No sooner thought than at it I went, doing it at the time each queen was caught, all being done under a bee-tent, for nothing could be done without the tent. This made the robber bees look shy, for if any succeeded in passing by the outside guards, it was met on its travels through empty space, by sentinels so numerous that it was glad to take refuge in flight. In this way my nuclei have been preserved, except a few weak ones—too weak for any time except in a good honey flow.

The next thing to be done was to finish taking off comb honey—yes, we have a little of that precious stuff here, about one-third of a crop—and as the tent cramped us so for room, I tried one or two hives without it. An awful state of affairs is no name for what this created! In taking the section cases from the hive a little honey was exposed where brace-combs had been built, and the robbers were after it almost in a cloud. Then a struggle ensued, the result of which was many stiff, but not cold, corpses covered the ground. It is hardly necessary to say that the writer escaped with his life.

I now took to the tent, and after a little I made it go very well. The mode of operation was as follows: The folding tent was placed over a hive having sections to come off, when the cover was taken off and placed on the ground in one corner of the tent. Upon the cover was placed a sheet, such as all bee-keepers should have in the apiary. A deluge of smoke was now poured down between each row of sections, when I waited a moment for the bees to run below, but not long enough for any to return, at which time they were taken off, and by the shaking made, most of the few remaining bees shook out, when the surplus arrangement was placed on the sheet, and the same wrapped snugly about it. An enameled cloth quilt was now placed over the frames, and the cover put on. I now removed the tent, placed the wrapped up sections on a wheelbarrow which stood waiting, when I was ready to proceed to the next hive. The robber bees howled about the tent as long as the hive was opened, but upon closing it and wrapping up the sections, they dispersed. In this way I work right along, accomplishing what is necessary to be done.

One other item: During one of these busy days, a queen-breeder wished to exchange queens with me, so without a word of notice he sent on his best queen saying, that he "hoped it would not inconvenience me." Well, it did not, although five years ago I should not have known exactly what to have done with a queen coming thus unexpected. But now I went to a hive which was tiered up for extracted honey, having the front side covered with bees, and having my nucleus box in my hand. After getting things arranged a little, the tent was let down over us (bees, hive, things, and myself, I mean by us, for I have not had an hour's work outside of my own, in the apiary this season), the hive opened, and I soon had the frames out of the upper story standing around the hive with the bees filling themselves with honey. As there was a queen-excluding honey-board above the lower story, there was no danger of getting the queen. Oh, how the robber bees did howl about the tent, and as I waited a moment or two for the bees to load up, I enjoyed a good laugh at the expense of those would-be but baffled thieves.

The bees were now shaken from the frames into the box, the frames put back into the hive, and all nicely closed. The buzzing of the bees in the box kept the robbers about the tent this time, so when I lifted the tent a cloud of them took to the wire-cloth covering of the box. At the bee-cellar door I dispersed them with smoke, and quickly drew into the cellar. This was at 10 a.m. At 3 p.m. the queen was dropped in with the caged bees, and at 4:30 a.m., the next day, they were hived on two frames of hatching brood and two of honey. In 24 hours this choice queen was laying nicely, and is the mother of what will be a good colony of bees in the fall.

I saw, a day or two ago, from the pen of one of our most noted writers on bee-culture, that "no infallible way to introduce a queen had been found." If he will try the above plan, it is my opinion that he will never be heard saying so again.

Borodino, ⊙ N. Y.

Apiculturist.

Race and Variety in Bees.

PROF. A. J. COOK.

As is commonly observed, all animals tend to vary. How seldom we see two individuals of our most distinctive breeds or races of cattle, like the noted Angus, the Devon, or the Herefords, that are precisely alike. These variations, which are always more or less transient, are not sure to be reproduced. We call them mere varieties.

Now let us suppose that some expert breeder who has an ideal animal in mind selects from these varieties of only such animals as point towards his ideal. He will, after a series of years, produce animals which possess marked characteristics, which have been retained so long that they are quite permanent. The longer they have been held by careful selection, the more permanent they are, and the more certain they are to be reproduced in the progeny of their possessors. Such animals form a race, or breed. *Such* animals will *vary*, and so we shall have varieties within the race. The more fixed the race, the less frequent and the less startling will be these variations. Every breeder of cattle and horses, etc., knows and acts upon the fact, that to maintain the excellence and most desirable characteristics of any of our breeds, care, selection and a keen insight and observation are all-requisite. These very variations make great improvements ever possible; they also point to degeneration, unless caution and intelligence push it aside.

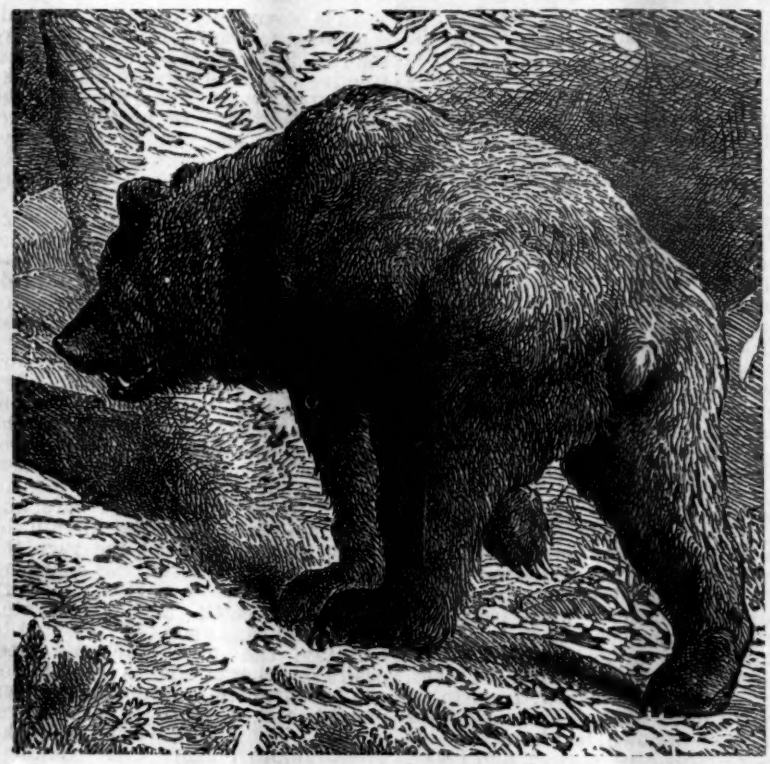
Our Italian bees are surely a race, though made so by the careful selection of nature. Those who hold that the Italians do not breed as true to type as any of our best breeds of sheep or cattle, may well look about them, for impure mating is surely the deceiver that has misled them. Nor is it true that the excellence of the Italians will be maintained without careful breeding. If the possibility of degeneration characterized only varieties and not races, then we should have no races. Albino bees are varieties; but if we should select long and carefully with white fuzz only in view, we might soon change this variety characteristic into the more fixed one of race.

The practical point to be drawn from all this is obvious. Messrs. Alley and Demaree, in their excellent articles, have emphasized none

too vehemently the necessity of care and intelligence in selection, and pains-taking in all the work of breeding.

The great work of Major Hallett, of England, in developing very valuable races of wheat, if I may use the expression, is full of important suggestions to bee-keepers. I have often thought and stated that the most hopeful path towards the progressive apiculture of the future lies through the improvement of our stock by following the principles as laid down and followed by all of our most successful breeders whether of plants or animals.

Agricultural College, ♀ Mich.



THE HONEY-EATING BEAR OF CALIFORNIA.

Exchange.

A Grizzly Bear and the Bees.

SCENE IN A CALIFORNIA APIARY.

The Hutchinson brothers have a large apiary up at Victor Tejunga, says the Los Angeles (Calif.) *Express*. It is an isolated place, far from real-estate booms and the haunts of men. But it is a good place for bees, and there, as a rule, they toil unmolested except by their owners, the Hutchinson boys. The country is romantic.

The quiet life of the little rural retreat was turned into the greatest excitement last Thursday night. While the Hutchinsons were asleep and dreaming of the great sums of money they would make this season, a stranger entered the camp. He was not slow in making his presence felt and heard.

The sleepers were suddenly awakened by sounds that suggested a small cyclone raging among the bees. One of the men got up, looked out of the window, and what was his consternation and terror to see the faint outlines of a huge, brown-colored monster upsetting the bee-hives and working destruction with property that required the toil and economy of a number of years to accumulate.

The surprised spectator hastened to his brother's bedside and told what was going on in the apiary. The two rushed out, one taking his rifle. The bear was evidently hungry, for he made savage lunges at the boxes filled with delicious honey. He would take a few mouthfuls out of one frame and then go for another.

The Hutchinson boys concluded that if they did not act on the instant the bear would soon leave them without an occupation. The gun was leveled and discharged. The ball found its way through the thick hide of bruin back of the left shoulder. It was evidently almost a "center-shot," for the animal fell. But he remained on the ground but a second. He arose, enraged with pain, and made frantic plunges at the nearest hives. Meanwhile the men advanced a little. The bear caught sight of them and made a rush at them. When within 20 feet of where they stood his progress was arrested by another leaden messenger. It struck a vital part, and once more the huge bear fell. This time he did not get up.

A third ball was put into his side, which caused his death. Upon examination it was found to be a grizzly cub about two-thirds grown. Next day he was dressed and weighed. The scales tipped at 700 pounds. This is the second or third bear ever killed or seen in that section.

For the American Bee Journal.

The Solar Wax-Extractor.

G. W. DEMAREE.

I commenced my experiments with solar heat to melt and separate wax and prepare it for use, in the fall of 1881. Flat melting-pans, and perforated holders over the pans, and all like devices look more ingenious than they are really useful and effective. None of these old devices will separate the wax from old combs in quantity and quality to pay for the trouble. They do some better with the soft cappings that come from the honey-knife; but upon the whole they are no improvement over the Swiss steaming apparatus, which, under my skill, is well-nigh a failure to separate the wax from old pollen-filled combs, and old combs of any sort whatever.

After I invented my cylinder-form melting-pan, and put my improved solar wax-extractor in operation, I was astonished to see how much good wax I had been throwing away. The cylinder-form pan gives double drainage to the melted wax, at the sides of the pan, and down its centre towards the wax moulds at the "dip" end of the pan. When the old combs are hot and melted down, they are broken up with a paddle, and the mass is drawn up the sides of the pan, making an opening in the centre of the pan lengthwise with it, so that the hot wax, more subtile than the refuse, drains down the sides of the pan, and down into the wax moulds. The "pitch" to the pan is obtained by blocking up the legs at the north end of the frame or box. A little experience will soon enable any one to regulate all these matters to the best advantage.

When rendering cappings, the pan must set nearly level if the weather is very hot, otherwise the melted propolis will slide down with the wax and honey, which cannot be entirely avoided, but if not in excess, it will settle under the cake of wax. When rendering old combs some water is put in the wax-molds to give room for the sediment under the cake of wax. When rendering cappings, the honey they usually contain makes water in the molds unnecessary.

I have thus particularized to answer letters of inquiry from persons interested on this subject. The several experiments that I have been conducting this season with solar heat, has led me to believe that this powerful agency is capable of serving bee-keepers in many ways heretofore undreamed of, when inventive genius brings it under proper control. I have found that combs infested with worms and moths' eggs can be heated

in the solar apparatus till every moth worm and egg is destroyed, without damaging the combs perceptibly.

Granulated honey can be reduced to the liquid state, leaving it with all the natural smoothness and flavor of new honey, or more nearly so, than by any other method known to the art. Beeswax can be bleached and moulded into small cakes for the retail trade. I can take dark, green, inferior-looking wax, such as is turned out by the Swiss wax-extractor from old, dark combs, and by repeated melting in the solar apparatus, change it to nice yellow wax.

You may drain the cappings in the usual way, and then wash them (as many persons do to utilize the adhering honey in vinegar making), and after all that, they will yield a surprising amount of honey under solar heat. But the solar apparatus saves the labor of the mussy job of washing the cappings. It will save every ounce of the honey. Messrs. Dadant & Son have frequently referred to the fact that the refuse of old combs hold on to the wax with persistent tenacity. Try any method of rendering old combs, and it will be found that they are right about it. The improved solar apparatus is the only device known to me that will separate the wax; but it must be kept at work at it every sunshiny day. It will bring out the wax without cost, and but little labor.

I have found that the heating power of the apparatus can be increased by flaring the end of the box in which the wax-moulds are placed, and which points towards the sun. The slanting end of the box brings the sun's rays more directly on the wax-mould, keeping the wax in the melted state and floating it above the dirt, etc., so that the cake of wax will come out of the moulds leaving the dregs, etc., under it. I would flare the end of the box just 6 inches from the perpendicular, and make the sash 6 inches longer than in my former description. Three panes of glass, 14x20 inches, will make the sash the right size.

Christiansburg, Ky.

British Bee Journal.

The Visual Organs of Bees.

R. GRIMSHAW.

[*Prepared and read by the author at the Quarterly Meeting of the British Bee-Keepers' Association, on July 20, 1887.*]

The worker-bee has about 12,000 eyes, the drone more than twice that number, and the queen only some 10,000 (quite plenty, one would think), but, as we know, all three kinds possess the three large simple eyes—*stemmata* or *ocelli*—fixed quite in the central line of the head; those of the drone being on what we may term the *forehead* of the bee, whilst the simple eyes of the female are on the top of the head. Observation, in addition to anatomical structure, tells us that the bee has a vast range of vision, and that this must be of a telescopic nature goes without saying, when we consider that she has to discern minute specks of color at what (remembering the small comparative size of the insect) must be called immense distances; the flower on its part making these specks easiest to be seen by using as a color-bait the attractive and somewhat gaudy primaries—red, blue, and yellow, most frequently.

Each of these myriad eyes serves as a minute long or short range telescope, according to its position on the curved eye-mass, the longer distances being taken by those nearer the centre, and the shorter by the separate eyes near the margin. The bee thus gets an accurate picture of the country extending in a semi-circle before it, but in all probability appearing like a flat wall; that is, without perspective. The circle of its vision may be represented by a circumference of twelve miles, or two miles in every direction.

At this range any bright speck of color is a bid of wages, which, in the majority of instances will be paid for services rendered by the bee, the flower doing its utmost to attract its attention by using, as I said, most frequently, the glaring primary colors. Large flowers are single and solitary, whilst small ones are massed together by the plant into a head, a spike, or an umbel. These conglomerations of small flowers are again massed together by the hand of nature into sheets of bloom, of which mountain thyme, the sages and saxifrages of the Alps, or the purple heather of the moors, are familiar examples; and, so that there shall be little chance of the bee *not* seeing them, the most telling background or setting is used in nature's color-grouping—red is set in green, blue in orange, yellow in purple, and *vice versa*.

Green, orange, and purple set each other off, as do russets, grays, and browns. All for a purpose, and nothing without a purpose. Thus, so far as the bee is concerned, color is for the eye, and the eye for color. So, we may say, the telescopic eyes of the bee are intended and used for little else than as *first guides* to flowers. On approaching a flower, now come into play the guides to its contents—scented nectar—these are the organs of smell, situated, as we are told, in the antennæ; and these organs discriminate which flowers ought or ought not to be visited, for many of the color-baits prove "a vain delusion and a snare." These perfume-guides are an infallible means of detecting bee-food, for where there is not nectar there is pollen; besides we must not conclude when we see bees paying visits to flowers which are to us odorless that they are nectarless, and that consequently the bee's search is fruitless, for nectar and perfume exist in minute quantities far beyond our discernment. Fortunately, or unfortunately, for us our sense of smell is by comparison a very coarse and untrustworthy affair.

I think that before a bee alights on a flower, its compound eyes become useless, that is, superseded, and during its search in the flower-folds they are protected from friction and stickiness by the countless hairs serving as eye-buffers, the antennæ and tongue doing all the searching and gathering. Indeed, these telescopic eyes *must* be useless at such very close quarters, or they would be provided with an adaptable focusing arrangement somewhat similar to our own. They are admirable for their purpose, and when that fails some other power takes up and continues the sense chain, notably, touch and smell, these being intensified at short ranges in the same measure as the vision of the compound eye falls short. What, then, is the use of the three large simple eyes, microscopic in their action? For use in the flower-depths where the hairs of the bee become bathed in sweet liquid, or in narrow flower tubes laden *nolens volens* with pollen granules? I think not. Other senses are of more service.

I will lay before you two hypotheses as suggestions of the true place occupied by these eyes in the economy of the bee. The first of these suggests them as *homing guides*. We have dazzling tints tempting the bee through its compound eyes (flower-guides); nectar appealing to the food-guides; and as there must be a guide somewhere to *dulce domum*, where shall we look for it? Let us test the return journey by the same means as the outward trip. Dazzling tints for the telescopes there are none; landmarks for the telescopes plenty; but, alas! as soon as the neighborhood of these landmarks be reached, the next guides, the scent-discerning antennæ, totally fail, as is proved by frequent dying of bees when within a few feet of home, the hive having been removed from its old stand. Telescopic and microscopic eyes, hearing, touch, smell, all fail the bee when its home is interfered with to the extent I name. Where is the homing power? If it be *instinct*, instinct fails a few feet from home. *Instinct* will not lead it to take advantage of hedges, houses, or drains in strong winds. If reason be its homeward guide, reason fails also a few feet from home. So also do these three eyes, as the organs of vision simply.

My first proposition is, that as the simple eyes are arranged in a triangle on the head of the bee, it makes use of some superior kind of trigonometry in finding its way home, just as it uses some more intricate system of mathematics than we are acquainted with in its cell-construction. The three simple eyes are not arranged in an obtuse triangle without the angle *principle* being brought into play as a factor in its vision, for it is in accordance with the triangular principle that the two side eyes have an outward aspect and inclination, whilst the lower and front eye looks forward.

From our limited knowledge let us reason from what we *do* with triangles in optics, to what the bee *may do*. By a system of triangles, aided by tele-

scopes (like the bee) we ascertain the difference of remote objects, the height of mountains, the distance to the earth's centre, its diameter and circumference, the form, size, and distance from us of the sun, moon and stars. The vision through the bee's three eyes must perforce give it the bases and apex of an inverted triangle, whatever use it puts the knowledge to, thus obtained. This local triangular vision in connection with distant telescopic vision is certainly an actual occurrence, and is in singular similitude to our own triangulations, whatever may be thought of such a coincidence. Now it is a well-known fact that upon a bee's first trip from home it circles round it a few times, then approaching and receding (without turning round) from the entrance in an almost straight line, as if "taking bearings," to use the stereotyped phrase. Yes, but taking bearings on what basis? Let the mariner take bearings without his angles, and his instruments as correct bases, and note the disastrous result. On the other hand, let the bee with its telescopic range note prominent objects in its range of vision, and at the same time note with its short-focussed three simple eyes the position of near objects with regard to distant ones, and its way home is assured, so long as the distant landmarks are kept in view. It can return to its own garden and hive to a certainty. Remove the hive, and all its local triangular calculations are disarranged. It is lost. The unerring aim of the insect for the old spot, whether its home be there or not, goes a long way to support the suggestion that its homing guide within well-known landmarks is by calculation almost entirely mathematical, and that *without* this triangular calculation all its other guides—sight, smell, hearing, and touch—fall with the bee to the ground.

My second hypothesis as to the use of the ocelli is not quite so vague in its character as the foregoing. We find the worker-bee in the deep darkness of its cell carrying out with its jaws the unshapely little heaps of wax into a series of triangles of almost mathematical exactness. Well, darkness is only a *comparative* term—absolute darkness we can scarcely obtain. The skull-like frame-work in which these eyes are set is so waved or convoluted that the two upper eyes are directed outwards, and the lower one forward, this triangular outlook being further secured by an arrangement of hairs which prevent the eyes seeing in any other direction. We have next the wedge-shaped head of the bee, apex downwards, and from the centre of the cell-base we have a series of wedge-shaped results in wax, one triangle being from the middle of two walls to the centre (this gives us the cell-floor), and another from the corners of the cell-walls to the centre (thus we get the wall).

As the bee works upon the plastic wax it supports itself by its six legs on six rudimentary cell-walls, and gnaws away the superabundant wax from the circular to the angular form, its guide in this operation being probably, first, the immoveable, staring simple eyes, fixing the triangles, next the highly sensitive tactile antennæ, and, finally, for soothing down and chiselling purposes we have the wedge-like head. As for the existence of stemmata in the queen, which does not build, a moment's reflection will show you that as the worker is an imperfect queen, or the queen an imperfect worker (I don't care which), this point is disposed of. With regard to the drone, a little physiological reasoning will discover the necessity for their existence. I put these two theories before you more as suggestions for interesting speculation—at least so they have proved to me—than as distinct statements of proven fact, for such I fear they will never be.

The discussion of the topic presented by Mr. Grimshaw was as follows:

Mr. Garratt did not think he could add any remarks of interest to the essay which had been so ably prepared, but would like to ask one or two questions. He did not feel quite sure whether it was intended that the meeting should regard the statements Mr. Grimshaw had made as ascertained facts, or as speculations. It seemed to him that they were speculations, and he thought towards the conclusion of the essay just read, Mr. Grimshaw admitted that. He was startled at the outset to hear that bees had so large a number of eyes. Many writers on bees had fixed the number of separate eyes at 800 in each compound eye, and now it was said that instead of hundreds there were many thousands. He would like further light thrown on this matter. It seemed quite reasonable that if bees had as many eyes as stated, they must serve different purposes, or nature would not have been so prodigal in designing such an organ of vision. Also with regard to the organs of smell being contained in the antennæ, he thought that statement was purely speculative. Certainly more light had been thrown on the subject by Mr. Cheshire in recent times than before, but Mr. Grimshaw had gone further than Mr. Cheshire. It occurred to him that that subject, like many others of a scientific character in relation to bees, might be taken into consideration by the association, with the object of promoting further research and discovery. One of the aims of the institution should be to encourage experiment for the purpose of gaining increased scientific information. Many of the points touched on by Mr. Grimshaw were well worthy of further elucidation. The knowledge of the habits, instinct, and mode of working of bees was in its infancy, and he recommended that the association should organize a system of close and methodical observation in the direction suggested.

Mr. Webster thought Mr. Grimshaw's figures respecting the number of facets in a bee's eye far more correct than Mr. Garratt's computation of 800. He had counted 100 facets in a bee's eye which occupied no more space than a pin's point, but he had no instrument fine enough to compute the number of facets in a single eye. With regard to bees building their cells hexagonally, he thought the bees built the cells round in shape, and that by pressure they became hexagonal. He did not believe the triangular eyes had any influence on the building of hexagonal cells. As to bees taking points by triangles in the same way as mariners, he doubted the assertion, because bees frequently made mistakes by entering the wrong hives. They became mixed to a considerable extent. Where two species of bees were kept like the black and Italian, dozens of the latter might often be found in the black bees' hives. On the other hand, Italians would not permit strangers in their hives.

The chairman would like to know what color bees had a preference for. In his garden there were large patches of yellow flowers, which were generally supposed to be bee-flowers, but the bees did not appear to work on them in nearly such large force as on the mignonette.

Mr. Grimshaw said that in his remarks about color, he had excluded from consideration clover, heather, or any flowers which attract bees by their odor. He thought it could not be questioned that the eye was intended to distinguish colors. Sir John Lubbock's experiments showed that they preferred flowers with a blue tint. He believed the object of bright colors was to tempt the bee to visit such plants, and when the bee arrived within a certain range it knew whether or not anything could be gained by an inspection of the flowers. Its telescopic vision enabled it to see these colors at a great distance. There was no doubt that both bumble-bees and honey-bees visited flowers without finding nectar therein; and it must be taken for granted that color was the attraction in the first instance. With regard to Mr. Webster's remarks about cells, he thought if an examination of the outer edges of the comb were to be made it would be found in many instances that the cells were quite angular, where there could be no pressure. With regard to the hexagonal shape of the facets of the separate eyes of the compound eye-mass, the outer walls were not hexagonal but circular; therefore it might be that the chitine in a soft condition was pressed into hexagonal form, but in its outer edges it was free to assume any shape. In reply to Mr. Garratt, he could say that his (the speaker's) figures were quite within the mark when estimating the number of facets at 12,000 for a worker, upwards of 24,000 for a drone, and about 10,000 for a queen. The queen did not require so many eyes as a worker, and the drone, needing a very extended vision, had double the number of a worker. A drone flew only in fine weather, and at a different altitude to other bees, and the object of its search was so rare that extraordinary powers of vision were necessary.

Mr. Meggy would like to know how far the statement was to be considered reliable, that the bee had a sensation of feeling in its antennæ; and he would also like to hear a few words from Mr. Grimshaw in reply to Mr. Webster's remarks as to the failure of bees to find their right homes, probably owing to a want of sight. Mr. Cheshire's observations tended towards the belief that the antennæ were the seat of feeling. Mr. Grimshaw could perhaps say whether the Germans agreed with Mr. Cheshire's views. Possibly Ligurian bees went to other hives for the purpose of robbing, and not because they had lost their way, as Mr. Webster suggested. In an early volume of the first edition of the *Popular Educator*, published about 25 years ago, a statement was made on the question of Euclid as to the exactitude of the bees working in the hexagonal. The writer tried to show that the bees were not quite exact in their mathematics, but his arguments were afterwards vigorously assailed, and the bee's measurement found correct.

Mr. Grimshaw said with regard to bees not always coming back direct to their own hives, he thought one or two exceptions must not be taken as upsetting the rule. There was a saying that if a strange bee went to a hive with its honey-sac full, it was received with "open arms." With regard to the smell organs being situated in the antennæ, experiments had been made by clipping off the antennæ of insects for the purpose of seeing whether or not the latter would find nectar. The result of such experiments was that drone, queen, worker-bee, ants, and other insects possessing antennæ, and which feed on scented substances, went wandering about in a very aimless manner after being deprived of their antennæ. In addition to that there were certain depressions on the antennæ provided with nerves, which the highest authorities argued could be put to no other purpose than that of smelling.

Mr. Webster did not know whether it was that the bees went visiting one another, or that by mistake they entered the wrong hives and were accepted for the time being because they brought supplies with them; but an examination of his colonies of black bees, night or morning, would often show more than a hundred Ligurian intruders.

Mr. Grimshaw said Mr. Webster's remarks struck at the root of one of the bee-keeper's articles of faith. They all knew that sentries were placed at the entrance to a hive day and night, which were able to detect strangers by the smell. All bee-keepers must have witnessed the conflicts which took place from time to time on the alighting-board between strange visitors and the inmates of the hive.

Mr. Daintree endorsed Mr. Grimshaw's views. He frequently searched his hives, but seldom or never found an Italian bee in the wrong hive. He thought bees had a keen sense of hearing. A party of hand-bell ringers came into this district twelve months ago, and immediately they began to ring their bells, although at a long distance off, the bees flocked out of all the hives in large numbers.

Mr. Webster was of the opinion that bees going to a hive to rob were stopped by the sentries not so much by a sense of smell as by the particular action of the strangers in approaching the hive. He believed that the sentries could tell the difference between a bee which had lost its way and a bee which came for the purpose of robbing. A robber bee going to a hive made a peculiar kind of hum, which was totally distinct from a bee bringing in honey.

Mr. Grimshaw said that in cases where hives had been moved in the day-time, the bees belonging thereto would fly about the old stands, and frequently die from inability to find their homes instead of entering other hives. With regard to the bees' eyes, there was no doubt they were so placed for the purpose of giving triangular vision. They represented the instruments which the civil engineer used in his measurements, and combined a triangular system of optics with telescopic arrangements.

Mr. Hooker thought Mr. Grimshaw's arguments very feasible, and suggested that Mr. Webster should propound an alternative theory if he did not believe them.

Mr. Webster believed that the two sets of eyes were for seeing far and short distances, but he did not think that the bees acted on the principles of trigonometry.

Mr. Meggy thought that the ocelli were placed so as to give the triangulation, but that the compound eyes gave the short sight for use in the flower especially. From observations made in his own apiary, he believed it was very rare for bees to make a mistake and visit the wrong hive.

Mr. Grimshaw believed the bee saw objects near to it by means of the short telescopes. The telescopes varied in length, the compound eye-mass being rounded. The facets near the centre had a longer range than those at the outer edges. He did not think the bee used the three simple eyes for ordinary vision at all, because the other eyes answered the purpose admirably.

In answer to Mr. Meggy, Mr. Grimshaw said that the eye was shaped like an orange, and that if a section were taken, it would be found that some of the eyes had short tubes and others long tubes. He believed that bees saw short distances with the short tubes, and long distances with the long tubes, in the same compound eye-mass.

The Chairman moved, and Mr. Garratt seconded, a vote of thanks to Mr. Grimshaw for his valuable and interesting essay.

Mr. Grimshaw briefly thanked the audience, and said he had been amply repaid for his trouble in preparing the manuscript, by listening to the very interesting conversation which had ensued thereon.

Bee-Keepers' Magazine.

High Prices for Honey—Kissing Bees.

MRS. M. L. THOMAS.

I long ago adopted a rule not to reply to press notices, however erroneous they may be, for I have observed that there is a certain class of men wholly incapable of doing anything better, who can always contradict and object to whatever others have thought or said or done, and discussion with such is time worse than wasted. But I am going to depart from this rule, that I may thank you for your generous endorsement of my truthfulness and honesty of purpose, in your review of an article in the AMERICAN BEE JOURNAL, which seems indirectly to take exception to a speech made by me on "Women in Bee-Keeping," before the New York State Bee-Keepers' Convention, at Albany, N. Y.

It would not be strange if in the rapid utterances of an extemporaneous speech, or in the rendering of it by reporters, something might be said, or reported, not intended by the speaker; but in looking over those passages quoted by you from the Chicago BEE JOURNAL, I am happy to say that, while parts of it are not correct strictly, I find nothing that I am not willing to admit for the sake of the argument, or let it pass by if it suits the writer to have it so. Albeit, I do not think that a sneer or sarcasm is ever an honest argument, or worthy the attention of a right-minded person, nor is it in this case even a denial, except by implication, without reason.

The very first sentence: "In a woman convention, etc.," is entirely without foundation in fact. The speech in question was delivered before a convention composed entirely of men, or with not more than one other lady present, and if I remember correctly, the first sentence uttered made note of the fact. The men present were all thinking, experienced bee-men, not mere learners, and not a word of dissent was expressed.

The theme was one selected by the committee, and the duty, as well as the pleasure, of the speaker was to present it in a way calculated to interest women in the delightful pursuit. This I did by giving facts in my own experience, and of others well known to me. I believe I stated nothing that was not strictly true, and I do now reiterate them, adding what the reporters failed to give, that my convictions are that bee-keeping is still in its infancy; that its future honey production will be greatly in advance of anything yet known; that what I claim to have done is not a large claim, but is very little compared with what might be done, even in the present time, by enlightened skill and enterprise.

A number of years ago a bee-keeper in the basswood region of Cherry Valley, N. Y. (I forget his name), claimed to have obtained from a single colony in one year, a surplus of 1,100 pounds. A howl of ignorant

surprise greeted his statement, but he was a man who understood himself and his subject, and he gave blow for blow, and *being a man* I never heard that he took back his words.

The reference made to a lady member of the Philadelphia Bee-Keepers' Association, who took a first prize at the Pennsylvania Agricultural Fair the third year of her experience, and who sold part of her honey on the Fair Ground for 50 cents per pound, and other points in her experience, are facts on record. They came to me in my official capacity as judge of industrial insects, a post I have had the honor to fill for many years in Pennsylvania. They were stated in the presence of the President of the Philadelphia Association, and at least one other member, and their truthfulness is entirely beyond dispute. If time had permitted, or if my illustration had not been confined to woman's work, I could have told many more remarkable facts of other members of that association, one of whom, in his enthusiasm, spent several years on the coast of Africa in the investigation of scientific apiculture.

The point on which the gentleman seeks to be specially witty and sarcastic, is that which he terms "Kissing bees!" His idea of a caress or a salute is very different from mine. I was trying to argue that bee-keeping, to become popular, must be raised to the place of a most ennobling science. I spoke of the marvelous ingenuity and mechanical skill of the bee, of the unselfish devotion to the queen mother that will suffer misfortune, starvation, death, that she may live. I claimed that they have memory, that they recognized kindness and resent injury.

For many years I used the Langstroth plan of subduing my bees by sprinkling with sugar water on opening the hive, and I said I often noticed the bees alight on my hand as if to caress or kiss it, thus expressing their pleasure at my coming. If this expression is too poetic to suit the gentleman, of course he is quite at liberty to use another better suited to his own taste, but I like it. I think that it is a good one to express the thought. I wish I might claim it as original, but candor compels me to admit that it is not. Langstroth says his bees will follow the hand that has held the queen as if to caress it, and that when he opened the hive to sprinkle the sweets upon them they showed unmistakable pleasure. I quote from memory, without claiming to use his exact words.

It is enough for me that I have, in my close and friendly relations with my little friends, observed these evidences of high intelligence which places them in the front ranks of the insect creation. If the editor of the AMERICAN BEE JOURNAL could see that it would be a just act to lay this explanation before his readers, he would honor himself.

[Yes, indeed; the editor of the AMERICAN BEE JOURNAL lays this entire letter of the lady in question before his readers with *pleasure*.

It seems that some reporter for the daily press had made up a case to suit himself, and we saw only the phase of it as presented by him. He said it was in "a woman's convention," that a "Mrs. Thomas" made the speech, etc., but did not say where it was held, or give any clue to the identity of the speaker, or for what purpose the convention was held.

It seems that the time Mrs. Thomas had in view was the "long ago," when imported queens sold readily from $30 to $50 each, and honey in 8 and 10 pound boxes sold at 50 cents per pound. The reporter located this by the expression "*two years ago*." That makes quite a difference.

The "rosy account," as it was being copied in the daily papers, was deceptive, and hence our remarks.

We are glad to have Mrs. Thomas give the "true version" of that speech, even though we cannot endorse all she claims—still she has a right to her own views of the matter.

As to the "kissing," the lady remarks that the editor's "idea of a caress or a salute is very different from [her's] mine!" We certainly referred to the old-fashioned kind, and know of no other kind worth mentioning! But we are *too bashful* to discuss that loving salutation with a lady, and will pass it, with the remark that she then used a very inappropriate and misleading word to express her ideas.—ED.]

For the American Bee Journal.

Names for Honey out of the Comb.

HENRY K. STALEY.

As there seems to be "no let up" concerning the naming of honey taken out of the comb, and the doing away with the word "extracted," I would suggest any one of the following words, which, concerning honey taken out of the comb, means about the same as that of the word "extracted," and the "extract of honey" cannot make its appearance from any of them. I would suggest the following:

EXTRICATED HONEY.—This means honey sent out of the comb, which in truth it is by the centrifugal force of the extractor, and it also fully conveys the idea. This word is a good one to stand in place of "extracted," and do away with that mistake, which Mr. Demaree says "would put millions of money into the pockets of the honey-producers of this country;" and I fully agree with him. It has only ten letters, while "extracted" has nine, and this is also an important feature concerning it. The type that is already set up, need be little changed, because all that is needed is in addition, the small or capital letter I, as the case may require. If the type is already set up for the word "extracted," take out a few quads, put in the letter I after R, and turn *ac* around to *ca*. Thus by the turning around of two letters, and the addition of one, the hallucination, in respect to "extract of honey," is done away with, and bee-keepers may still have their own desired labels, with but a slight alteration on the face of the label. This is a very important affair, for when once an apiarist adopts a certain label that he likes, it may be hard for him to find another to suit his taste.

EXTRUDED HONEY.—This means honey expelled from the comb, which is also made true by the use of the extractor.

EMITTED OR EVOLVED HONEY.—Emitted or evolved both express the truth concerning honey thrown out of the comb. Of course there are more meanings to these words, but I am using the meanings of them with respect to honey taken out of the comb. I am of the opinion that any one of these words may be used with success, and the phrase or title, "extract of honey"—which has proved so damaging concerning the vending of honey taken out of the comb, and still portends to continue so—be done away with.

Mr. Editor, if any of these words are suitable, give us your idea concerning them; if not, condemn them, so that no more valuable space may be wasted.

But really it is out of the way for any one in this enlightened epoch of time to call "extracted honey," "extract of honey," and therefore refuse to eat one of nature's greatest luxuries—"extracted honey." True is the apothegm, "Be slow and be sure," and so is the other, "A stitch in time saves nine."

Pleasant Ridge, O.

[The words extricated, extruded, expelled, emitted and evolved may all be properly used to indicate "honey out of the comb," but not one of them are as euphonious as "extracted" for its name. We do not want a change "just for variety"—it must be an improvement, or it loses the greatest plea for its adoption.—ED.]

Convention Notices.

☞ The next meeting of the Northwestern Illinois and Southwestern Wisconsin Bee-Keepers' Association will be held at O. J. Cumming's, in Guilford, 4 miles northeast of Rockford, Ills., on Thursday, Aug. 18, 1887. D. A. FULLER, *Sec.*

☞ The Cedar Valley Bee-Keepers' Association will be held at Waterloo, Iowa, on Sept. 6 and 7, 1887. The Cedar Valley Bee-Keepers' Produce and Supply Union will meet with the above Association. This meeting will be made both pleasant and profitable to bee-keepers. All interested in apiculture are cordially invited to attend. Do not be discouraged with this year's crop, but come and have a good time. H. E. HUBBARD, *Sec.*

Local Convention Directory.

1887.	Time and place of Meeting.
Aug. 18.—	N. W. Ills. & S. W. Wis., at Guilford, Ill. D. A. Fuller, Sec., Cherry Valley, Ill.
Sept. 6, 7.—	Cedar Valley, at Waterloo, Iowa. H. E. Hubbard, Sec., La Porte City, Iowa.
Nov. 16-18.—	North American, at Chicago, Ills. W. Z. Hutchinson, Sec., Rogersville, Mich.
Dec. 7-9.—	Michigan State, at East Saginaw, Mich. H. D. Cutting, Sec., Clinton, Mich.

☞ In order to have this table complete, Secretaries are requested to forward full particulars of time and place of future meetings.—ED.

SELECTIONS FROM OUR LETTER BOX

Large Yield of Honey.—J. Van Deusen & Sons, Sprout Brook, N. Y., on Aug. 3, 1887, write:

We have a large yield of the nicest white honey ever gathered, and the bees have made a nice start on buckwheat, which is very promising.

Terrible Drouth.—F. L. Merrick, Waldron, Ills., on Aug. 8, 1887, says:

Bees are as still as in winter. We have had very little surplus, with poor prospects for fall flowers at present. There is scarcely a flower or clover blossom in this section of the country. Cisterns are all dry, and wells are drying up fast. Pastures are brown, and as dry as a powder house.

Bee-Work has Ceased.—E. Jarvis, Fair Grove, Mich., on Aug. 6, 1887, says:

Work with the bees ceased gradually in this vicinity from the middle of July until now. It is extremely dry here. Boneset and buckwheat yield scarcely anything. Bumble-bees die on the boneset. Nothing but robber bees carry honey upstairs now.

Oval-Leaved Privet.—Rev. A. Abbott, of Ryde, Isle of Wight, England, writes on July 25, 1887:

I send you a specimen of a tree called here the "Privet" tree. I think it is found in some parts of America, where it generally, I hear, is kept so closely trimmed that it is seldom seen in blossom. Here in the Isle of Wight it grows and blossoms, and is full of honey-bees all day. It blossoms about July 1, and is still in flower, but the petals are fast falling off. It is not what some call "privet" in Nebraska—a bush about 3 feet high with red berries. This I send you is the *Ligustrum ovalifolium*. I think it would be very valuable for honey in America, and so I direct attention to it, and you can doubtless tell if it is used for the bees in that country. I came from St. Joseph, Mo., to Ryde, a town in the Isle of Wight, June last, on account of my own health and that of my family, and I expect to live here permanently with my daughter.

[The specimen sent by the Rev. A. Abbott, is of the genus *Ligustrum*, and there are 21 varieties, of which these are the common names: barren, box-leaved, Chinese, Chinese dwarf, Chinese wax, common, Egyptian, fortune, gold blotched, hairy, Japanese, mock, oval-leaved, pipe, shining-leaved, spike-flowered, Syrian, variegated-leaved, white-berried and yellow-berried. The specimen sent is *Ligustrum ovalifolium*, and its common name is "oval-leaved privet."

The Japanese privet (*Japonicum*) is found in the Southern States, and blooms in May and June; but although its honey-producing qualities are good, it is not enumerated among the first-class honey-producers.

The "privet" is found here in the North and West, but is not considered worth mentioning as a honey-producer.—ED.]

No Swarms—Honey-Dew.—J. H. Blanchard, Boise City, Idaho, on July 30, 1887, writes:

Not a single colony of my bees has swarmed this year. Frosty nights in May and June killed all the fruit-bloom, and feeding had to be resorted to. White clover is nearly gone, and about all they have to gather at present is "honey-dew," peppermint, and buckwheat. The surplus crop outside of "honey-dew" this fall, will be very slim.

One Pound Per Colony, etc.—Jacob Copeland, Allendale, Ills., on Aug. 8, 1887, writes:

If "Misery loves company," I ought to be happy—but I'm not. From 55 colonies of bees, spring count, I have obtained 7 good swarms and 55 pounds of honey stored in empty combs in one-pound sections, that I had left from last fall. According to the assessor's report, there are 550 colonies in this township, divided perhaps among more than one hundred persons, and I have not heard of any one that has done any better than I, but I know of several that have not done so well.

Small Average Per Colony.—H. A. Paxson, Spring Brook, N. Y., on Aug. 2, 1887, writes:

As far as I am able to learn, the bee-keeping in this locality has been nearly a failure this year. My apiary will hardly average 6 pounds of comb honey to the colony, spring count, and the surrounding apiaries will average about the same. About three-fourths of the bees swarmed, but the honey-flow was too short for them. Many colonies have not as yet more than half filled their brood-chambers. We have had comparatively few second swarms. There will probably be taken about 8 pounds of extracted from each colony, by those who produce that kind of honey; but very few of those who do not keep more than 10 or 12 colonies, use the extractor.

Sugar Stores Uncapped.—Julius O. Jaehne, Western Springs, Ills., on Aug. 3, 1887, writes:

For some time I have been feeding my bees granulated sugar, dissolved. They have stored considerable of it, but not a cell is capped. What is the cause?

[Without knowing more of the conditions, I cannot tell why your bees fail to seal over the stored syrup. If you made it very thin, and the weather is cool or wet, or both, that would account for the facts you state. I have received so many questions of late, relative to feeding bees, that I will at once prepare an article upon the subject—one that I have had much experience with.—JAMES HEDDON.]

Bees still Swarming.—L. Reed, Orono, Mich., on Aug. 9, 1887, writes:

My bees are swarming yet. I wintered 54 colonies, all coming through in good condition. I sold 12, and commenced the season with 42 colonies. The spring opened early, and I obtained some surplus from hard maple, the first I ever had from that source. They commenced swarming on June 7. I had from 3 to 7 swarms per day. I hived all first swarms, cut out queen-cells, and put back all second swarms. About July 1, the first swarms commenced sending out swarms. I took the old queen away from them, or killed her, and put them back; then when the young queens hatched out, they came again as I knew they would. Then it was cut out cells and put them back. They have superseded about two-thirds of the old queens in my apiary, which is something uncommon with me. I had one colony that cast a swarm on June 7, and another on June 17; I put them back on July 30, and they cast a prime swarm, the same as a first swarm. That was the second case of the kind I ever had. I have had 7 swarms in the last three days; I have put back over 50 swarms, and still they keep it up. I had a large swarm this morning. I will get about one-third of a crop of honey. It is very dry here; we have had no rain since July 4. Bees are bringing in some honey, as dry as it is. I shall have to feed all young colonies, unless it rains soon to bring on the fall crop.

Cinnamon-Oil for Bee-Stings.—Dayton E. Barker, St. Joseph, Mo., on Aug. 9, 1887, writes:

I have tried everything for bee-stings, and I found that pure cinnamon-oil is the best thing I have ever tried. Two drops of cinnamon-oil will keep it from swelling. Perhaps all bee-men have not tried this. On page 491, Mr. Denison Hoxie suggests kerosene, but I think he will find cinnamon-oil better than kerosene oil.

Predicts Great Winter Mortality.—Dr. S. W. Morrison, Oxford, Pa., on Aug. 9, 1887, says:

There is, fairly reckoning, no surplus honey, as for winter stores as much must be fed back as has been taken. I have correspondents all over the United States, and have the same report everywhere. Unless proper attention is given to this, I predict that the winter mortality will be unprecedented.

Quoting the Price of Sugar.—J. W. Wilcox, Scales Mound, Ills., on Aug. 8, 1887, says:

The honey crop being a failure in many places, and bee-keepers being obliged to feed sugar syrup to keep their bees from starving the coming winter, would it not be well for you to quote the price of sugar by the barrel, in the AMERICAN BEE JOURNAL. I mean Chicago prices, and for how much you could supply it to your subscribers. If you can aid us in any way this unfortunate year, bee-keepers will, I think, be thankful for the favor.

[Sugar varies in price, and quotations can be seen in all the daily papers. The margins are very close, and every one can buy just as well in their nearest town as in large cities, by adding the freight charges. To-day pure sugar is worth from 6 to 6½ cents, according to quality.—ED.]

Motherwort.—W. F. Stewart, Greenfield, Iowa, on Aug. 6, 1887, says:

I send you a plant found growing in my orchard. I would like to know what it is, and if it will pay to cultivate for honey. It has been in blossom for a month, and covered with bees all the time. I cannot see that they get any pollen from it. It will have seed ripe at the bottom of the stalk, and blossoms on the top.

[It is motherwort, an excellent honey-producer.—ED.]

Light Crop in Kentucky.—E. Drane & Son, Eminence, Ky., on Aug. 7, 1887, write:

We have a very light crop of honey this year. We had reasonably plenty of white clover bloom, but the weather was too cool. We had 40 acres of Alsike clover that was very fine, but the weather conditions were such that it yielded but little honey. We sowed 200 acres to Alsike and other grasses on wheat last spring; 60 acres that was sown late, has been killed so badly by dry weather that we will have to plow the land and sow again. We got 600 or 700 pounds of very nice comb honey that we are selling at 25 cents per pound.

Must Feed Bees for Winter.—Geo. H. McGee, Point Marblehead, O., on Aug. 3, 1887, says:

The honey crop in this county is an entire failure. Nothing was gathered from clover, very little from basswood, and nothing is expected from fall flowers. The bees will have to be fed to keep them from starving the coming winter. I commenced the season with 30 colonies, and have had no swarms.

Centrifugal or Thrown Honey.—J. Tomlinson, Allegan, Mich., says:

Let me add my mite to the discussion of the change of name of extracted honey. Why not "let well enough alone?" The word extracted expresses the exact truth. But if we must have another name, I would suggest "centrifugal honey;" or if that is too long a word, why not call it "thrown honey," which is also the exact truth.

[It is not desirable to make a *change* unless a great improvement is at the same time obtained. Extracted is far superior as a name to either of those mentioned by Mr. Tomlinson—though either of them would express the truth.—ED.]

The Honey Crop in Virginia.—H. P. Deahl, Berryville, Va., on Aug. 6, 1887, says:

The honey crop is a complete failure this season. Last season I had 11,000 pounds of comb honey in one-pound sections; this season I have taken about 3 000 pounds from 220 colonies. I have increased my apiary to 250 colonies. I hope that next season my apiary will bring me 15,000 or 20,000 pounds of comb honey. I have also disposed of quite a number of fine Albino and Italian queens, this season.

Buckwheat Yielding Well, etc.—Charlie W. Bradish, Glendale, N. Y., on Aug. 5, 1887, writes:

At the beginning of the honey harvest this season I had 100 colonies in the best condition. They went to work in the sections with a rush, and had a set nearly completed when the drouth commenced. They did not gather anything to speak of after that until linden bloomed, when they finished up the sections which they had left unfinished; and that ended the honey crop for 1887, being about 25 pounds per colony, spring count, with an increase of 41 colonies. What honey I did get was very nice. The bees are now at work on buckwheat, and it is yielding honey very well. If it continues a few days more they will have enough for winter. Most of the bee-keepers in this county report not over one-fourth of a crop.

Poorest Season in 15 Years.—R. A. Calvin, Hartford, Mich., on Aug. 4, 1887, says:

I packed 43 colonies of bees in clover chaff last fall, in low sheds. I lost 9 colonies, leaving me 34 this spring, which I increased to 60 colonies by natural swarming; besides, I returned 10 second swarms, and have taken 1,000 pounds of honey, against 3,000 pounds last year from 28 colonies. This is the poorest season that I have experienced for 15 years, on account of the continued drouth.

Honey and Beeswax Market.

The following are our very latest quotations for honey and beeswax:

CHICAGO.

HONEY.—We quote: In 1-lb. sections, 15@18c The color makes the difference in price.
BEESWAX.—22@24c. R. A. BURNETT,
Aug. 12. 161 South Water St.

KANSAS CITY.

HONEY.—We quote new crop: Choice white 2-lb. sections, 15c.; dark 2-lbs., 11@12c. choice white 1-lbs., 18c.; dark 1-lbs., 12@14c. Calif. white 2-lbs., 14c.; extra C 2-lbs., 12@13c.; C 2 lbs., 10@11c. Extracted, new crop, choice white, 8@10c.; dark, 5@7c: Calif. white, 8c.; amber, 6@7c. Prices firm.
BEESWAX.—20 to 22c.
Aug. 10. HAMBLIN & BEARSS, 514 Walnut St.

CLEVELAND.

HONEY.—Choice new white 1-lb. sections sell as fast as they arrive, at 16c.; 2-lbs., 14 to 15c.; second grade, 13@14c. Extracted, 4@6c. Demand good.
BEESWAX.—25c.
Aug. 9. A. C. KENDEL, 115 Ontario St.

DETROIT.

HONEY.—Some new white comb sold at 12½ cts., but prospects for better prices are good.
BEESWAX.—23c.
July 20. M. H. HUNT, Bell Branch, Mich.

SAN FRANCISCO.

HONEY.—We quote: Extracted, white liquid, 5@5½c.; amber colored and candied, 4@4½c.—White to extra white comb, 12@14c.; amber, 8@11c. Demand improving and market firm.
BEESWAX.—17@20c.
Aug. 6. SCHACHT & LEMCKE, 122-124 Davis St.

ST. LOUIS.

HONEY.—Choice comb, 10@12c.; latter price for choice white clover in good condition. Strained, in barrels, 4@4½c. Extra fancy, of bright color and in No. 1 packages, ¼-cent advance on above. Extracted, in bbls., 4½@ ½c.; in cans, 5½ to 6c.—Market very firm at above prices.
BEESWAX.—21c. for prime.
Aug. 2. D. G. TUTT & CO., Commercial St.

SAN FRANCISCO.

HONEY.—We quote: White comb, 12@13c.; extra white comb, 14 to 15c.; dark, 7 to 10c. White extracted, 5½@5¾c.; light amber, 4½@5c.; amber and candied, 4¼@4½c. Receipts light; poor crop.
BEESWAX.—21@23c.
July 25. O. B. SMITH & CO., 423 Front St.

MILWAUKEE.

HONEY.—Choice new 1-lbs., 14@15c.; old 1-lbs., 12@12½c.; 2-lbs. not in demand. 10@11c. White extracted in kegs and barrels, 7@7½c.; in small tin cans, 7½@8c.; dark in kegs and barrels, 6@6½c.; in small tin cans, 6½c. Market ready for new crop.
BEESWAX.—25c.
July 21. A. V. BISHOP, 142 W. Water St.

CINCINNATI.

HONEY.—We quote for extracted, 3@7c. per lb. Best comb brings 11@14c. Demand improving.
BEESWAX.—Good demand,—20@22c. per lb. for good to choice yellow.
Jun. 11. C. F. MUTH & SON, Freeman & Central Av.

BOSTON.

HONEY.—1-lb. packages of white clover honey at 13@15c.; 2-pounds at 11@13c. Extracted, 5@7c. Sales very light. Fancy white extracted in good demand, but supply limited.
BEESWAX.—26 cts. per lb.
July 11. BLAKE & RIPLEY, 57 Chatham Street.

AMERICAN
ESTABLISHED IN 1861
OLDEST BEE PAPER IN AMERICA
BEE JOURNAL

Issued every Wednesday by
THOMAS G. NEWMAN & SON,
PROPRIETORS,
923 & 925 WEST MADISON ST., CHICAGO ILL.
At One Dollar a Year.

ALFRED H. NEWMAN,
BUSINESS MANAGER.

Special Notices.

To Correspondents.—It would save us much trouble, if all would be particular to give their P. O. address and name, when writing to this office. We have several letters (some inclosing money) that have no name; many others having no Post-Office, County or State. Also, if you live near one post-office and get your mail at another, be sure to give the address we have on our list.

As there is Another firm in Chicago by the name of "Newman & Son," we wish our correspondents would write "American Bee Journal" on the envelope when writing to this office. Several letters of ours have already gone to the other firm (a commission house), causing vexatious delay and trouble.

We will Present Webster's Dictionary (pocket edition), and send it by mail, postpaid, for two subscribers with $2. It is always useful to have a dictionary at hand to decide as to the spelling of words, and to determine their meaning.

Money Orders can now be obtained at the Post Offices at reduced rates. Five dollars and under costs now only 5 cents. As these are absolutely safe, it will pay to get them instead of the Postal Notes which are payable to any one who presents them, and are in no way safe.

Red Labels for one-pound pails of honey, size 3x4½ inches.—We nave now gotten up a lot of these Labels, and can supply them at the following prices: 100 for $1.00; 250 for $1.50; 500 for $2.00; 1,000 for $3.00; all with name and address of apiarist printed on them—by mail, postpaid.

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In the Interest of the bee-keeping public as well as in order to increase business, we wish to make it generally known that we deal in **Honey and Beeswax** especially.

Our personal acquaintance with the trade all through this country, and our connections in foreign markets, enable us to handle any quantity of comb and extracted honey and wax most advantageously.

It is our aim not only to supply the demand, but also to create a demand, especially in those parts of the country which heretofore have been neglected, or overlooked. Honey at present prices ought to be used as a regular food product by all classes, It is to the interest of every thoughtful apiarist to increase the consumption, in order to equalize the rapidly increasing production, and thus uphold prices—but it is also absolutely necessary to offer to consumers the **Pure** and **Perfect** article only, in order to maintain their confidence.

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Prompt returns guaranteed at head-quarters, 122 Water Street, near Wall, New York.

F. G. STROHMEYER & CO.

Yucca Brushes are employed for removing bees from the combs. They are a soft, vegetable fiber, and do not irritate the bees. We can supply them at 5 cents each, or 50 cents a dozen; if sent by mail, add 1 cent each for postage.

Preserve your Papers for reference. If you have no **BINDER** we will mail you one for 60 cents, or you can have one FREE if you will send us 3 new yearly subscriptions for the BEE JOURNAL.

We have a large quantity of CHOICE WHITE EXTRACTED HONEY, in kegs holding from 200 lbs. to 225 lbs. each, which we will deliver on board the cars at **10 cents** per lb. Orders solicited.

Queens.—We can mail a Tested Italian Queen (bred for the best results as well as for beauty) for $2.00; Untested Queens, $1 each, or $9.00 per dozen. Orders solicited.

Back Numbers of the BEE JOURNAL for this year are getting scarce. If any of our new subscribers want them, they should order them soon, or we may not be able to supply them. Last fall we had to refuse many applications for them, as they were all gone in September. Say so at once, if you want them.

We pay 20 cents per pound, delivered here, for good Yellow Beeswax. To avoid mistakes, the shipper's name should always be on each package.

☞ The Cortland Union Bee-Keepers' Association will hold their annual basket picnic at Blodgett's trout-pond in Cortland, N. Y., on August 23, 1887. All interested in bee-culture, with their families, are cordially invited to attend.
D. F. SHATTUCK, Sec., Homer, N. Y.

Union Convention at Chicago.—The North American Bee-Keepers' Society and the Northwestern Bee-Keepers' Society will meet in joint convention in Chicago, Ills., on Wednesday, Thursday and Friday, November 16, 17 and 18, 1887. This date will occur during the *second week* of the Fat Stock Show, when excursion rates will be very low.

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TODD'S HONEY-CANDIES sell well at Fairs—average wholesale price 16c ₱ lb.; retail, 30 cts. Mail samples, 25 cts. HONEY and BEESWAX wanted on Commission, by—ARTHUR TODD, 2122 North Front St., Philadelphia, Pa.
31A13t

WANTED,

ALL the Bee-Men who see this advertisement to send us hundred pounds of 1-lb. and 2-lb. sections of White Comb Honey, as sample, by Express, stating quantity and price for same. Cash, delivered in Kansas City. CLEMONS, CLOON & CO.,
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PURE Bred Poultry!—BROWN LEGHORNS and WYANDOTS. Cockerels, $1.50 to $5.00 each. Eggs in season.
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I AM re-queening my Yard, and offer one and two year old Tested Italian Queens at 65 cts.; Hybrids at 35 cents each. Warranted good stock and vigorous Queens. About 100 Queens.
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Wholesale Honey Merchants.
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ELEVEN Essays by eleven prominent bee-keepers, sent by mail for 10 cents.
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It contains 220 profusely illustrated pages is "fully up with the times" in all the improvements and inventions in this rapidly developing pursuit, and presents the apiarist with everything that can aid in the successful management of the honey-bee, and at the same time produce the most honey in its best and most attractive condition. Bound in cloth, $1.00, postpaid.

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Gone where the Woodbine Twineth.

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"ROUGH ON RATS" is a complete preventive and destroyer of Hen Lice. Mix a 25c. box of "ROUGH ON RATS" to a pail of whitewash, keep it well stirred up while applying. Whitewash the whole interior of the Hennery; inside and outside of the nests. The cure is radical and complete.

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I have been experimenting somewhat in the same direction, and while my experiments were by no means so thorough and exhaustive as yours, they make me an earnest supporter of the beliefs and practices laid down in your book, which I value above price, and can endorse every word of it. Sincerely yours, DWIGHT FURNESS.

☞ Price of the Book, **25 cts.** Stamps taken—either U. S. or Canadian.

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ONE Warranted Queen..... $ 75
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Our Cartons *for enclosing* **Section Honey** *are the* **best** *and* **lowest priced** *in the market. Made in* **1** *piece. With* **Tape** *Handles or without. With* **Mica** *Fronts or without. In the* **Flat** *or set up.* **Printed** *or plain. Any way to suit. We are bound to please. We have put in special Machinery for their manufacture, and are prepared to fill Orders promptly.* **Circulars Free.** *Samples* **5c.**

14 *oz.* **Glass Jars $5.25** *per gross, including Corks and Labels. 7 1-2 & 2 gross in a Case. Send for Catalogue.*

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Beautiful Italian Queens.

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☞ Do not fail to send for descriptive Circular; if you have not my 1886 Circular send for that too.

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Send 75 Cents for my New Book—"A Year among the Bees;" 114 pages, cloth bound. Address,

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